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THE BIODYNAMIC SPRAY AND COMPOST PREPARATIONS PRODUCTION METHODS

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Booklet 1

First English edition

Biodynamic Agricultural Association

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THE BIODYNAMIC PREPARATIONS PRODUCTION METHODS:

Guidelines for making the biodynamic field sprays and compost preparations

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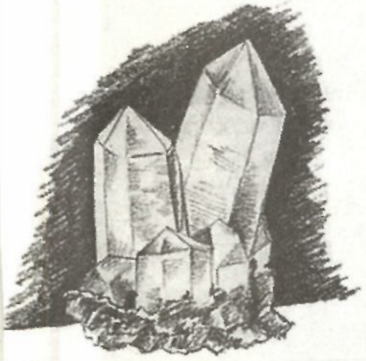

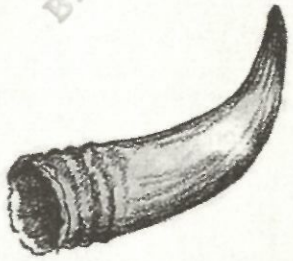

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THE BIODYNAMIC SPRAY AND COMPOST PREPARATIONS PRODUCTION METHODS

based on details given in *Agriculture*
a course of 8 lectures held by Rudolf Steiner
in Koberwitz, nr Wraclaw (Breslau) in 1924
and on practical experience with the preparations
from 1924 to 1998

Booklet 1

1st English edition based on
3rd extended German edition

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Preface to the English edition

When Rudolf Steiner gave the course of lectures, which inspired the biodynamic movement, modern farming practice with its heavy reliance on industrial fertilizers, chemicals and imported fertility, was only beginning to develop. During the years following World War 1, agriculture still followed traditional methods and observed what today would be recognized as organic techniques.

Already then, however the vitality of food crops and farm animals was perceptibly declining. Long term fertility, seed quality and disease resistance were no longer as they had been. It was concern for such things amongst a growing circle of central European farmers that led to the urgent request for Rudolf Steiner to bring his insights to the field of agriculture.

Now, 75 years later, the movement founded on those insights is active in more than 40 countries across the world and is at the heart of the rapidly expanding interest in truly sustainable agriculture. Key to its success as a farming method, is the use of the so-called "biodynamic preparations". Both the field sprays and the compost preparations provide an opportunity for the farmer or gardener to intervene directly and beneficially into the life processes at work both in the soil and in the growth of plants by taking account in a holistic way of the intricate web of relationships that influence life on this planet.

With this small handbook appearing in English for the first time, guidance is given to enable farmers and gardeners if not to make their own preparations, then at least to understand in detail how they are made. The experiences and methods described are taken from a lifelong involvement with them as they have been developed in central Europe. Conditions elsewhere in the world will be clearly very different and the methods described need carefully adapting to suit hot and arid regions or sub-arctic conditions etc. The basic principles governing their production remain true however.

It is also important to remember that while reference is made to the Christian year (Easter, Pentecost etc) the cycle of a Muslim or Buddhist year is equally valid. It is the in breathing and out breathing cycles in the year which are crucial. In the Southern Hemisphere Horn Manure should also be buried in the earth during autumn to receive the winter forces (i.e. during March and April) and dug out in spring (October and November).

The successful application of biodynamic methods depends on a continuing process of self-education. Each farmer and gardener has unique experiences and gains individual insights into how these preparations work and how they can be applied. As the years go by, production methods are being continually refined and in this book some of those refinements are shared. Christian von Wistinghausen who has worked so hard to produce this handbook has devoted much of his life to the agricultural impulse of Rudolf Steiner. In September 1999 he was able to organize an international conference at the University of Wroclav in Poland on "Ecological Agriculture Today". Here, close to the Koberwitz estate at which the Agriculture Course was originally given, the contribution made by biodynamic agriculture and its potential for the future was publicly recognized. Today a plaque commemorating the course can be seen at the entrance of Schloss Koberwitz.

Bernard Jarman 2000
Director BDAA

Preface to the 3rd German edition

These brief practical directions for making the biodynamic preparations are now being published for the third time (J. Voegele, 1950, C. V. Wistinghausen & W. Scheibe, 1981). Some suggestions have been added to aid understanding as well as further details drawn from practical experience.

The preparations, often regarded as the heart of the biodynamic approach to agriculture and horticulture, were developed by Rudolf Steiner prior to and during the course of lectures on *Agriculture (AC)* he gave in 1924, lectures based on anthroposophy (see Bibliography).

Modern science teaching is such that the world we perceive through the senses is generally accepted to be the only one about which it is valid to think and act. Thinking, however, is itself the bridge that takes us beyond the sense-perceptible world.

Steiner spoke of the farm as an organism, the organs of which are the soil, plants, animals and human beings, all of them also part of the whole cosmos. 'In agriculture the cosmic and earthly forces....work through the substances of the earth' *(AC)*. On this basis he developed the practices that have led to the biodynamic method. In his *Agricultural Course*, Steiner characterized our situation as follows: 'Humanity has no choice but either to learn something again in the different fields by considering the whole cosmic context, or to let nature and also human life die, degenerate.' Many people use their rational minds to exploit the natural world and create the familiar problems without realizing that there is this wider context. Possible solutions are only evolving slowly. One way forward is that of biodynamic agriculture and horticulture.

More than 70 years of experience and development now lie behind us. Until recently, it was predicted that biodynamic units would not be viable, for from the usual point of view and on the basis of general experience, they would certainly not be expected to thrive. The fact is that biodynamic work is based on premises that are much more far ranging than those of conventional science. Achieving mutual understanding is therefore not always easy at this fundamental level. Surely, however, nothing would be more in accord with the important lessons we are currently being forced to learn, above all about starvation in the third world, than to activate all the

potential of a given site to increase and stabilize productivity and grow high-quality foods.

Our experience so far gives us great inner certainty. Clearly much remains to be learned of things so far undreamed-of in conventional science. Even so, the tremendous wealth of information that has accumulated through modern science does provide a basis for its understanding from new points of view. The aim of the biodynamic method is to activate and develop a site's potential. Rudolf Steiner's preparations play a major role in this. We are indebted to those who carried the work both through the war and during the economic boom that followed, showing us how the natural world and its connections can be understood if only we make use of our senses and keep an open mind.

Intensive study, knowledge, and due respect for the biodynamic approach, are preconditions for the production and use of the preparations. This alone can lead to a real understanding of the preparations, whose production is described in this booklet.

Introductory and further training courses are held annually at the Goetheanum in Dornach, Switzerland, as part of the biodynamic research and development programme in Darmstadt, Germany, and also in other countries. These offer insights into anthroposophical agriculture, in particular the biodynamic preparations.

As far as possible the preparations should be produced on the farm, in the regional organizations or in the horticultural establishments where they are to be used. This will make them part of the whole living organism of the farm, garden and landscape concerned. They do not take the place of manures, nor is their function in the first place that of assisting in the rotting-down processes in manure, compost, slurry and liquid manure. Their task is rather to mediate the earthly and cosmic forces so as to support the function of plants as sense organs of the earth.

The preparations are not commercial products. Encouragement and guidance is available for those wishing to make their own.

The numbering of the preparations, from 500 to 508, was introduced in 1928, when it was felt that code names were needed. The numbers are widely accepted and often facilitate international communications.

This booklet is entirely pragmatic, reflecting the present state of knowledge for the benefit of biodynamic farmers, horticulturists and their helpers, i.e. for people who wish to produce and use the preparations themselves. It gives Rudolf Steiner's suggestions, together with more than 70 years of experience by our many friends. We are grateful to them all for providing us with such a sound basis for farming in this day and age.

Mäusdorf 1998,
Eckard and Christian v. Wistinghausen

GUIDELINES FOR OBTAINING, USING AND DISPOSING OF THE PREPARATION SHEATHS

Animal organs are used as sheaths for the biodynamic preparations when they are being made. They are not used as sources of nutrients but as composting aids.

The basic principle for their use was stated again and again by Steiner in his *Agriculture Course*, namely that the realm of 'the living' should not be abandoned. The organs are given no prior denaturing treatment (boiling, disinfecting, freezing, etc.). This is understandable when we realize that the organs are to perform a kind of function in the maturation process similar to the one they originally had within the animal organism. Such a function is at its best if the organs originate from the farm itself. Organs from neighbouring biodynamic farms may also be used. It is advisable to avoid using organs taken from conventional farms because of the totally different methods of feeding and care, and the possible risk of BSE.

Hygiene rules must be observed in making the preparations. Although offal disposal rules are not strictly relevant, existing regulations must be observed. On the one hand they serve to protect the environment, above all drinking water, and on the other they help put people's minds at rest.

This affects above all production of the Oak Bark preparation (pages 55 and 56).

The rules mean that unrotted animal residues must be disposed of at recognized offal disposal units (in Germany).

Readers are reminded that suitable protective clothing should be a worn, e.g. strong rubber gloves.

PRODUCTION OF BIODYNAMIC PREPARATIONS

The spray preparations

Horn Manure (500)

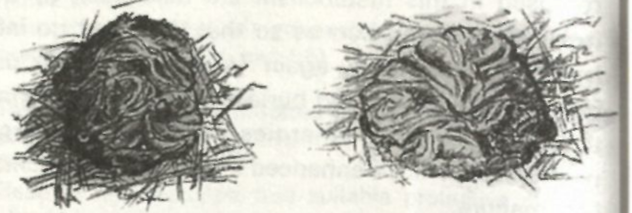
When food is digested, substances synthesized by living plants are broken down into their components. Energy, forces and substances are released in the process, and these are essential ingredients for building animal and human bodies.

Animals have no need, however, of the forces which human beings must develop in order to attain self-consciousness, and they therefore release those forces. Owing to its four stomachs and a long digestive tract (40 - 45 metres), a ruminant – especially a cow – has a tremendous digestive capacity, capable of processing large quantities. Apart from feeding its own body and producing milk, it also produces valuable manure. 'Forces released in this metabolism are held back by the horns and cloven hooves so that they may go into building up the body again' (AC). If manure is put into the cow's horn and buried in the ground during the winter, the energies released through metabolism will be enhanced and radiated back into the manure.

Plant growth reflects the earth's breathing, with exhalation in spring and inhalation in autumn. In winter the earth is able to receive new powers from the cosmos. Plants transform physical substances in the soil and in the air into living matter with the help of cosmic energies. Animals ensoul matter in the process of digestion. The cosmos fructifies them as they lie in the soil in the cow horn. The forces contained in the material are then transferred to water by stirring to create vortices, and this water is sprayed on to the soil and young plants to vitalize them.

Method

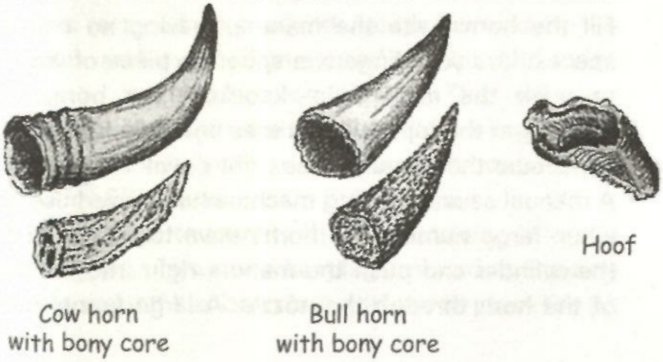
Use well-developed, undamaged cow horns and fresh, firm, well-shaped dung, without straw, from pregnant cows. The best dung is produced from grazing on pasture or by feeding clover grass mixture supplemented with hay and straw. Silage or beet leaf feeding is not recommended.



Solid well-formed cow pat

Collect fresh cow pats in autumn – in central Europe around Michaelmas at the end of September – directly from the pasture or before bedding down with straw. It is best used fresh, but may be kept frost-free in a container for up to two days.

The horns to be filled with dung should originate from cows of a native breed which have had a number of calves. If there is no alternative, it is also possible to use horns from cows from further away but still on the same continent. 'Calving rings' are a characteristic feature of cow horns. When active lactation starts after calving, a constriction develops at the base of the horn, which continues to grow in length but not in width at this time. Cow horns are relatively heavy, thick-walled, and slender in form. They show some degree of spiralling right up to the tip; the bony core is relatively short and contains cavities. Horns from bulls and oxen are not suitable.



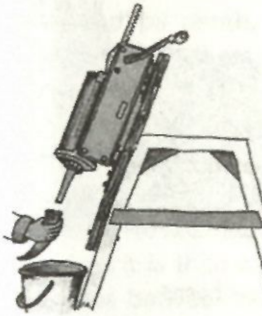
They have no rings, are thin-walled and generall conical, and growing straight rather than spirallin from base to tip. The bony core is only slightl shorter than the horn and consists mainly of fine porous, bony matter.

If the only horns available still have their bony core, they may be tied up in a plastic bag and put in the sun, covered lightly with straw, or buried in the compost heap. The horn will come away easily from the core after four or five days. Boiled, malformed o damaged horns cannot be used.

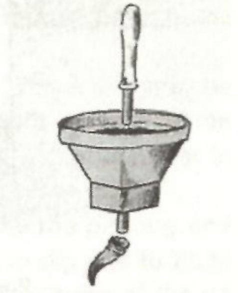
With the declining cow population and widesprea dehorning of cattle, experiments are now under wa using hooves. Results so far indicate that the hooves of female animals may also be used to produce the Horn Manure preparation (e.g. dissertation by T. Dewes, unpublished).

Fill the horns with the manure, leaving no empty spaces. Use your fingers, a spoon or piece of wood to push the manure in, knocking the horn, its opening at the top, several times against the floor to make sure the manure goes right down into the tip.

A manual sausage-filling machine has proved usefu when large numbers of horns have to be filled.Fil the cylinder and push the manure right into the tip of the horn through the nozzle. A large funnel has also proved useful, using a suitable rod to push the manure down into the horn.



Horn-filling machine

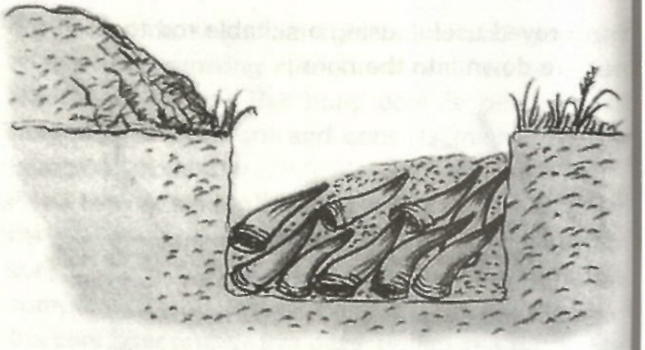


Funnel for Horn Manure

Preparing the pit

The filled horns are buried 30 - 50 cm deep in humus-rich arable or pasture soil of some depth. Places to avoid are wetlands, areas covered by the crowns and roots of trees and shrubs, and areas close to walls, roads or ditches. The individual preparation pits on the farm should be kept as far apart as possible, with a minimum distance between them of 50 metres.

It is advisable to identify the site carefully, either by putting in a marker and keeping a record or entering it on a map. It has been found useful to place the pit



Burying the cow horns

in a field, its centre 10 metres distant from two edges of the field. A good idea is to make a sketch of its position in one's diary.

If there is no soil of sufficient depth, dig a pit 50 - 60 cm deep and fill the base to a depth of about 5 cm with humus-rich topsoil. If the soil is clayey, wet or impermeable or the region has high precipitation levels, it is well worthwhile to drain the pit (see p. 23). If the soil is extremely heavy or rocky, or there is much rain, a shallower pit may serve. The soil covering must be raised in a heap above soil level.

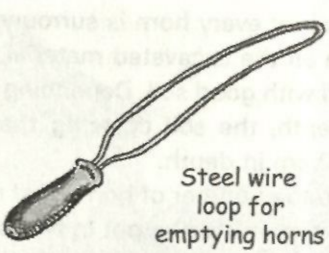
To prevent the horns filling with seepage water position them in the pit with the opening lower than the tip; this will prevent them filling with stagnant water. Fill the spaces between the rows of horns

with loose soil, so that every horn is surrounded. Cover the pit with all the excavated material, which may also be mixed with good soil. Depending on soil quality and pit depth, the soil covering the horns should be 30 - 40 cm in depth.

There is no limit to the number of horns that may be put in one pit. They may also be put in two or three layers. If hooves are used as well, place them flat in pairs, their openings facing each other.

It has been found helpful to make the pit long and narrow, as it is then easier both to dig and to fill in the spaces between horns from the sides of the pit in successive stages, the soil of the next section being used immediately to cover the horns, or to fill the emptied pit. The surface may then be sown (e.g. with mustard or legumes), providing some green cover and light shade.

The horns remain in the pit throughout the winter until they are needed for spring cultivation work (until about Easter/mid-spring). First remove any soil adhering to the outside, then empty the horns by knocking two together over a container, their openings facing downwards. A wire loop may also be used to extract the contents. This is made easier if the freshly dug-up horns are left under cover, or put in stacked wooden boxes for a few days, so that they dry out a little.



Emptying is made easier and faster by using compressed air from an extended nozzle.

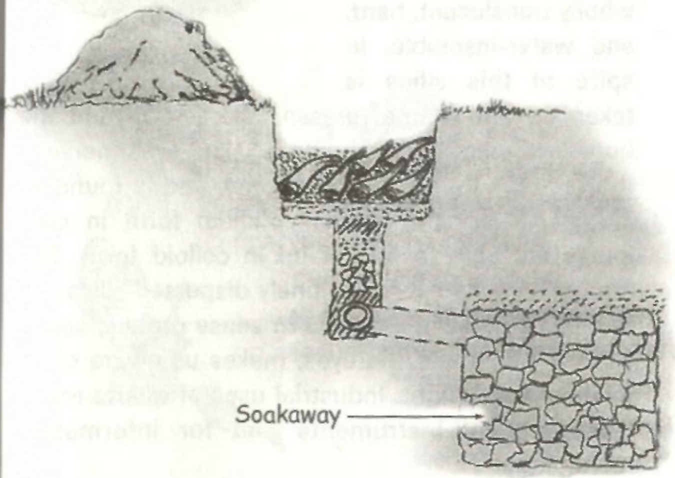
Desired consistency of the horn contents: dark brown colour throughout, no smell of manure, only the pleasant odour of humus.

If the material is still wet or green, perhaps even smelling of manure, leave the horns in the ground for a few more weeks. The problem with this is that earthworms like to breed in the horns from May onwards. Once dug up, the preparations are used immediately or properly stored (see page 77).

Following removal of the contents, the dried horns are best stored in a sack in the cow byre where the air can get to them. They may be used for a total of between three and five times to produce the Horn Manure preparation, providing they show only minimal damage or chipping. Horns seriously affected by rot must be replaced.

It is extremely difficult to break up used horns. Buried beneath newly planted trees or shrubs, however, they are a long-term source of nitrogen for the plants.

Preparation pit with drainage



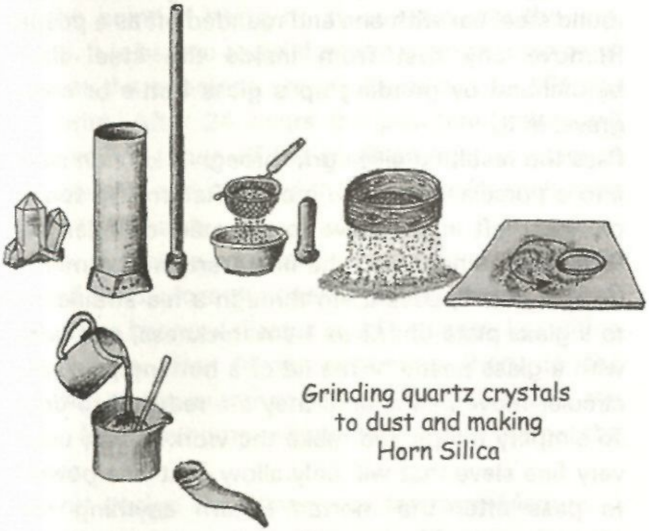
Horn Silica (501)

Rock crystal

Silica (quartz, SiO_2), the most beautiful form of which is rock crystal, is the main constituent of the earth's crust (47%). In its pure form it is wholly translucent, hard, and water-insoluble. In spite of this silica is taken up into plants (grasses, horsetails) and the bodies of animals and humans (skin, eyes, nerves). It structures the soil (sand grains), and is found as aluminium silicate and in colloidal form in clay. Plants are able to take it up in colloid form. The atmosphere also contains finely dispersed silica. The fact that silica is found in sense organs, above all in the skin and the eyes, makes us aware of its relationship to light. Industrial uses of quartz are in glass, optical instruments and for information technology.

Very finely ground quartz has a large light-reflecting surface area. This is put into cow horns, which are then buried in the soil to expose the silica to the light and warmth of summer.

When stirred in water for one hour and sprayed on to plants, this preparation conveys light qualities that have been transformed by the summer processes in the soil. This light energy promotes and organizes plant metabolism.


Grinding quartz crystals to dust and making Horn Silica

Method

You will need quartz in crystalline form (rock crystal, quartzite), amorphous form (agate, flint) or potash feldspar (orthoclase) and well-developed cow horns, each with several calving rings.

The mineral should contain more than 98% of silica and be in the form of fine dust. The rock crystal, pieces of quartz or pebbles are first of all broken up (e.g. using a hammer). A sawn-off oxygen cylinder has proved an extremely useful container for crushing the broken-up material still further, using a round steel bar with one end rounded off as a pestle. Remove any rust from inside the steel flask beforehand by grinding up a glass bottle or some gravel in it.

Pass the resulting silica grit through a kitchen sieve into a porcelain or agate mortar. Return the coarse particles left in the sieve to the steel cylinder for further grinding. Grind the finer parts in the mortar using a pestle, pass them through a tea strainer on to a glass plate of 1/2 to 1 cm thickness, and grind with a glass pestle or the lid of a bottling jar, using circular movements, until they are reduced to dust. To simplify things and make the work easier, use a very fine sieve that will only allow dust-fine powder to pass after the mortar. Return anything that remains in the sieve to the mortar, grind and sieve again. The finer the sieve, the less need for grinding on a glass plate. Mechanical ball mills, with the container and balls made of agate, may also be used.

Following Steiner's suggestion *(AC)*, we find it works very well to fill the horns with quartz or silica or also orthoclase feldspar ground to flour. Maria Thun has noted that finely ground argillaceous material may also be used.

Shortly after Easter, in spring, the floury material is mixed with rain water to give a paste which is just on the point of being runny and put into the cow horns. It is best to stand the horns upright or in sand so that the openings are level and can be filled to the brim. After 24 hours the powdered silica will have settled. Pour off the small amount of water at the top and add more of the paste to fill each horn again to the brim.

When the siliceous material has dried a bit and turned solid, close the opening with damp soil. Bury the horns between Easter and Pentecost, i.e. within 6-7 weeks after filling, entrusting them to the powers of the summer sun in the soil, unlike the Horn Manure horns which are buried during the winter.

The pit design is the same as for Horn Manure. It should not be near to any Horn Manure pits and should be in the open, so that the sun will reach the site all day.

Horn Silica is taken from the soil at the end of September or beginning of October. Remove all soil from the outside of the horns by washing or scraping.

Horns for Horn Silica are used only once. The pit may be re-used again and again, as is the case with all preparation pits.

Your notes:

PRODUCTION OF COMPOST PREPARATIONS

Yarrow preparation (502)

(Achillea millefolium,
Compositae family)

Yarrow

We may consider a plant like yarrow to be just a 'weed' but the picture changes if we look more deeply, considering its form, for instance, or its medicinal actions.

Yarrow, a member of the daisy family, develops a flat-topped cluster of small flower heads. It tends to grow in patches, with individual plants usually linked by rhizomes. The flowers are like a differentiated white or pink mirror that faces upwards. The leaves are most beautifully and finely divided, which is why the ancients called yarrow *supercilium veneris*, the eyebrow of Venus. The stems on the other hand are hard and fibrous, almost woody. They rise from a dense rosette of divided leaves in spring. Three qualities contrast with one another – the finely divided of the leaves, the differentiated nature of the florets and the firm stem, tending towards woodiness. The firmness reflects the nature of potassium, an element that acts as a catalyst in assimilation and the polymerization of sugar to starch, to cellulose. The fine divisions of the leaf are a manifestation of 'sulphur, vehicle for the spiritual principle' *(AC)*. Carbon as a structural element is given its specific structure by sulphur, and potassium acts as a catalyst for chemical processes in which light energy is used. 'The forces of earth and cosmos ... act ... through the substances in the soil' *(AC)*. This happens in every plant, but it is particularly marked in yarrow.

The other pole of the preparation is the bladder of a stag (red deer, *Cervus elaphus*). The stag has antlers. Cast off in February or March each year, antlers grow again from bony matter beneath a special skin (velvet) up to July; they increase greatly in size until mid-life, after that less so. They are like an antenna through which the stag releases excess forces (the opposite of a cow's horn, which holds such forces back). Through the senses the cosmic forces then radiate into the stag's metabolic processes and into the urinary bladder. Kidney and bladder eliminate salts dissolved in the urine, above all nitrogen and potassium. To make the preparation, the stag's bladder is stuffed with yarrow flowers and exposed to the light throughout the summer. During the winter, when the earth opens up to the cosmos as i inhales, it is buried in the ground.

Use yarrow flowers and the bladder of a red dee stag. Fresh bladders must be blown up as soon as they are removed from the carcass, using a smal tube (e.g. from a ballpoint pen), a straw or an ai pump. They are then hung in a current of air in the shade or dried in the sun before they are stored safe from moths and flies. They should not be exposed to frost.

Collect yarrow flowers on sunny days. Flowering should have reached the stage where all the florets in the cluster have opened. Some may be beginning to change into fruit. Use only the florets and as few stalks as possible. The practical way is to pick big bunches of yarrow and take them home to cut of the florets with sharp scissors or a knife.

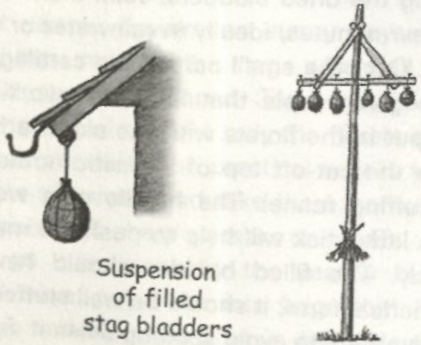
For large quantities, dry the yarrow bunches on slatted trays, put them into bags that let the air through and store hanging in the air until spring Dried florets and stalks can be separated by using a masher (a mouli-like apparatus for mashing pigs food) and a 10 by 10 mm sieve. For smaller quantities, cut the fresh florets off with scissors and dry and store like herb teas.

In spring, after Easter and by midsummer at the latest, spray juice pressed from fresh yarrow or a tea made from fresh or dried yarrow on the dried flowers, mixing them well, until the level of moisture is equivalent to that of slightly wilted fresh plants. Use the moistened florets to stuff the stag bladder. You may also fill the bladder with freshly picked, slightly wilted yarrow florets. Unfortunately, however, the plant flowers so late in central Europe that the period during which the bladder can hang in the summer sun will then be too short.

Before filling the dried bladders, soak them briefly, for just a few minutes, ideally in rainwater or warm yarrow tea. Cut off a small part of the cartilaginous opening to give a hole that is about two fingers wide, and put in the florets with the aid of a funnel made from the cut-off top of a plastic bottle or a sausage-stuffing funnel. The handle of a wooden spoon or a little stick will help to push the material down firmly. The filled bladder should have its natural spherical form; it should be well stuffed, but not excessively so, to avoid splitting when it dries. If it splits, put a new piece of bladder skin over the split and tie it down well.

Firmly tie the hole with string that will not break, using enough to make a loop for hanging. It is a good idea to tie the string around the bladder in a

net, as the string may slip off if tied only at the nec
so that the bladder may fall to the ground. The fille
bladders are hung in a dry, sunny place, e.g. unde
the eaves on the sunny side of a building. You ma
also make a stand on which the bladders can b
suspended in the sun. Take care that they do nc
knock against one another or the wall in the winc
Carefully pick or cut off any bits of fat, to prever
birds being attracted to the bladders. If birds d
peck at them nevertheless, put a net around them
leaving plenty of space.



Suspension of filled stag bladders

Take the bladders down in autumn, from the end o
September to mid-October, and bury them in th
ground. Chose a site for the pit as for the Hor
preparations, if necessary creating the require

conditions (see under Horn Manure). The soil covering over the bladders should be about 30 cm deep. To protect them from being eaten by mice in winter, line the pit with freshly cut elder branches (mice don't like the smell). Add a thin layer of soil and then a single layer of bladders, putting them all a slight distance apart. Loose soil will fill the spaces between when the pit is closed, so that every bladder is completely surrounded by soil. A coarse sack of residue-free natural fibre may be put over the bladders once they are lightly covered with soil; this will mark the boundary between the covering soil and the bladders when the pit is opened again. The sack allows life in the pit to develop freely. Place a layer of elder branches over the sack and possibly also two or three pieces of roofing slats, to prevent damage when digging up the bladders. On top of this put some bits of lath to discourage dogs, foxes or badgers from digging, finally filling up the pit with all the earth that was removed. Again make a drawing showing the position of the pit in your diary, with the distances from the field margins accurately measured, for it can be very difficult to find the pit again after tillage operations.

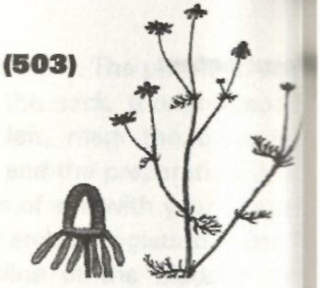
Carefully dig up the preparation–the remains of the bladders and their contents–in the spring, from around Easter to the end of April. The pieces of lat elder branches and also the sack, though usual only an imprint of it is left, mark the bounda between the soil covering and the preparation. Ve gently remove the last bits of soil with your finge or a spatula—just the way archaeologists do—for i most cases only the outline of the bladder an fragments of its membrane will remain. Rather tha lose some of the transformed flower material, it i advisable to include some of the soil which i touching it.

Having removed your yarrow preparation, cover th pit up again and sow crops on top. You may use th pit for the same purpose again in the autumn if has proved useful.

Your notes:

Chamomile preparation (503)

German chamomile,
scented mayweed
Matricaria recutita
(Matricaria chamomilla,
Compositae family)



German chamomile

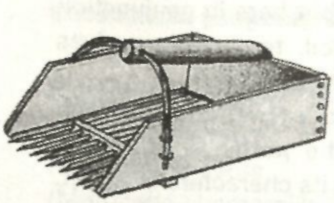
Chamomile needs light to germinate and is generally annual. Soils with a sealed or puddled surface offer the best conditions for germination with capillary water rising to the surface. When the sensitive seedlings have managed to develop growth is dense and bushy, with finely divided leaves and widely branching shoots terminating in a yellow flower head with white ray florets and a characteristic scent. Flowering is from early to late summer and may be prolific under the right conditions. The fine roots break up compacted soil giving structure to the topsoil. In a tea made of the flowers, chamomile brings this dissolving and healing process to the mucous membranes in particular. It can have demulcent and healing properties where inflammatory changes or hardening occur in the gastrointestinal tract.

Sulphur in extremely fine distribution is active in this plant, just as it is in yarrow, but here in conjunction with calcium *(AC)*. In the soil, too, calcium gives structure because of its ability to bind.
The plant material is put into a cow's intestine and buried in the soil through the winter. It will partly decompose but will not lose its characteristic scent. The finished preparation vitalizes plants and makes them resistant to malformation.

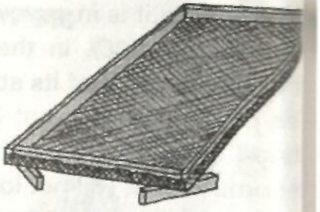
Method

Use flower heads of German chamomile, recognizable by the hollow conical receptacle and strong characteristic scent.
Put them into the small intestine (jejunum and ileum) of a cow. According to Dr Jörg Spranger (personal communication), the first, spiral part of the large intestine, the colon, can also be used.
Collect flowers that are in the process of opening, if possible on a sunny morning. If relatively large quantities are needed it is best to start as soon as flowering begins towards the end of May. A small comb of the kind used (illegally) in some areas to gather bilberries has proved useful for this.

Place the flowers on fly-screen wire fitted to a wooden frame (1 metre by 2) or on paper and dry in an airy place in the shade. When dry, transfer to



Chamomile comb

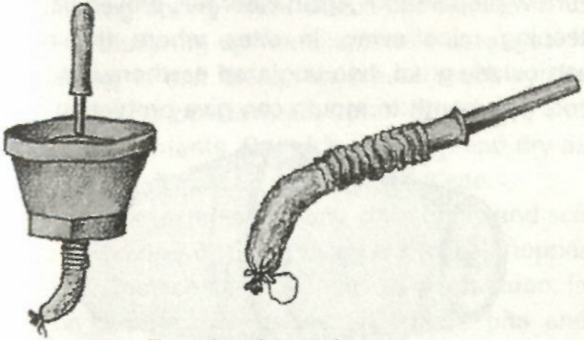


Comb drying frame

small sacks that will let the air through and hang in a suitable place till autumn. Fresh, slightly wilted flowers may also be put immediately into the fresh bovine intestine and either hung up in an airy, shady place or stored in dry peat, taking care to exclude moths and caterpillars.

As far as possible use intestines from your own animals. As they are not usually slaughtered at the required time, squeeze out their contents and without first washing or turning them inside out, fill with air, using a pump, tie off, and allow to dry hanging under cover or in the sun. When dry, store in an insect-proof container (strong plastic bag or aluminium box). To be on the safe side, you may put a small amount of volatile oil into the container to keep away moths. It is not appropriate to freeze animal organs used to make the preparations.

Between the end of September and mid-October, dampen the dried flowers with a tea made from whole, fresh plants and stuff them tightly into pieces of intestine about 20 - 50 cm in length, doing so by hand, using a sausage funnel and a stick. Before filling the intestines, tie off one end, tying the other end when finished (with a loop for hanging up). The kind of large funnel used for Horn Manure has proved useful in this case as well, with the intestine pulled over the nozzle at the bottom. Use the handle of a wooden spoon or something similar to push the plant material through the funnel into the intestine.



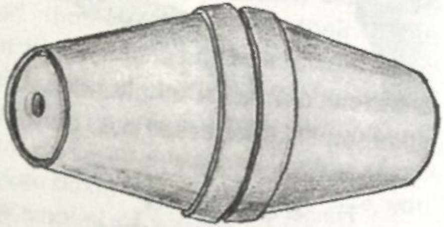
Funnel and tube for
horn manure and chamomile

An alkathene (V2A) or hard plastic tube 25 - 30 mm in diameter and 30 cm long has proved most useful.

The intestine can be pulled over it. Use a wooden rod 15 - 20 mm in diameter and 40 cm long to compress the flowers in the tube and push them into the intestine.

Hang the sausages up to dry for a few days, so that the intestinal wall will close up firmly around the contents. If you bury the intestines when still fresh, they will rot more quickly, and small creatures will be attracted by the smell of decomposition.

Like the Yarrow preparation, the Chamomile preparation is buried in autumn and stays in the soil for the winter. The pit should be positioned to meet the requirements given for the sprays and the Yarrow preparation. Again elder has proved useful in keeping mice away. In sites where the risk is particularly great, two unglazed earthenware flower pots put mouth to mouth can give protection.



Flower pots to protect chamomile intestines from mice

The Chamomile preparation needs a site exposed to the sun where the snow remains on the ground for as long as possible when winter comes to an end. An example would be an open field site where experience has shown that snow drifts tend to form. If necessary you may put a pile of snow over the pit. Dogs and foxes will smell decomposing matter and it is therefore advisable not to put the fresh chamomile sausages down by the edge of the pit when you are about to bury them. It is a good idea to put a lath grid into the top layer of soil when covering the pit or to put old disposable pallets over the top.

The following spring–from about Easter (March to April) –carefully dig up the chamomile sausages. If the intestine is still there, remove as much of the adhering soil as possible, slit open lengthways and take out the contents. Crumble these up and dry as quickly as possible in an airy, shaded place.

Chop up the intestines and any chamomile and soil residues adhering to them, using a kitchen chopper or the like. They can also be used as preparation, in liquid or semi-liquid manure pits, birch pits and compost heaps.

We know from experience that Chamomile preparation is always in short supply, and it is therefore a good idea to produce as much as possible. *For processing and storage see page 77.*

Your notes:

Nettle preparation (504)

(Urtica dioica, Urticaceae family)

'It really should grow around the human heart.' *(AC)*

Stinging nettle

Stinging nettles like to grow behind the house, in the half-shade among bushes, under trees, and in places where rubbish is lying around, where the area is untidy, or there is excess nitrogen. On digging up the soil one finds it dark, loose and rich in humus. The plant is erect, growing up to 1.5 metres high, with a firm, fibrous stem. The toothed, heart-shaped leaves terminate in a long point. They are decussate on the square stem, steadily decreasing in size up to the flower. The insignificant male and female flowers grow on separate plants in drooping spikes and small clusters respectively. The side of the plant facing the sun tends to be reddish in colour. Peacock butterflies and small tortoiseshells lay their eggs on nettles and their caterpillars feed on them. The leaves bear fine hairs with siliceous heads that break off on contact. The thin, calcified shaft penetrates the skin and releases a stingin fluid (containing sodium formate, choline an histidine) which also has medicinal actions. Th strong, widely spreading root system is ofte reddish or violet in colour. Fine dense rootlets g down into the soil, the densest root system Pro Ruth Kutschera has seen among the many roots sh has studied. Because of its rhizomes, the plant ofte grows in large colonies. Nettles are of considerabl benefit to soil, plants, animals and humans. So structure improves, excess iron and nitroge activities are withdrawn. Plants are freed fron aphids if sprayed with a 24-hour cold extract; nettl liquid left to mature for a few days or weeks an used in suitable dilution promotes growth. Added t herbal feeds for animals, nettles have a genera vitalizing effect. Humans use nettles to purify th blood and treat rheumatic conditions.

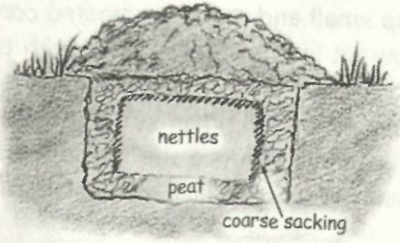
These natural properties are developed a ste further in the preparation. Nettles are buried in th soil for a whole year after the flowering period (i June). No animal organ is used to contain them, onl a layer of peat (moorland peat). The preparatio makes the manure sensitive and creates orde Manure and soil become sensitive *(AC)*.

Method

Gather stinging nettles at the first flowering stage. They flower progressively from below upwards, which is easy to see when there is no wind. The male flowers burst open in hot weather, releasing small clouds of pollen that are clearly visible.

Cut the nettles close to the ground with a scythe early in the morning and let them lie until the afternoon so that they begin to wilt. If you are cutting them on pasture land, where the cattle have left them standing, remember that all grass-eating animals love to eat slightly wilted nettles, leaving nothing behind. You also need to look out for birds' nests in dense nettle colonies.

In the meantime, dig a pit, following the directions given earlier for other preparations (e.g. Horn Manure). As you put in the nettles, make sure they are completely surrounded with at least 5 cm of peat and then pile the dug-up soil on top.



The work is made easier if one bunches the nettles or tightly stuffs a coarse sack with them. A fruit box of non-impregnated wood filled with nettles has also worked well. Cover the box with a piece of sacking and a few bits of wood that are a little shorter than the box. As the nettles rot down, the lid goes down with them. The sack separates the preparation from the peat layer. Another method is to put a bottomless box on the lower peat layer, pack peat all around it, fill it with the partly wilted nettles and keep pulling the box up as you continue putting in nettles. Finally add a layer of peat and remove the box. The nettles are then surrounded with peat only. This does mean, of course, that some peat will get mixed in when the nettles are dug up. The nettles stay in the pit for a whole year. They will have decomposed a great deal, forming a dark, solid and relatively thin layer at the bottom when you open the pit. Remove the peat layer with some care. Like the other preparations, the Nettle preparation is broken up small and put in a prepared container. The empty pit is immediately lined with peat again and filled with nettles cut that morning. It will serve its purpose again and again in the years that follow. It is advisable to produce the Nettle preparation in large quantities and be lavish in its use.

For processing and storage see page 77.

Your notes:

Oak Bark preparation (505)

(Quercus robur, Fagaceae family)

Pedunculate or English oak

The development and form of the oak tree reflect the fact that it is a symbol of strength and the struggle for existence. As a young seedling it has to cope with fungus diseases (e.g. mildew) and being eaten by insects. The young leaf emerging from the bud is extraordinarily delicate, even on a fully grown tree; it is yellowish or reddish in colour and often attacked by fungi and insects. The oak continues to produce new lateral shoots and becomes gnarled. Older leaves differ considerably in shape but are always characteristic. In contrast to the tender young leaf the wood is firm, hard, with coarse fibres, and very tough.
Oak bark grows fissured as the trunk gains in diameter. It provides protection on the outside. The constituents of the bark also show contrasts, with a high level of calcium (c. 75% of the ash is CaO) on the one hand, and tannin on the other (the reason why 'tanbark' was widely used in tanneries). Tannic acid has insecticidal properties, while calcium protects against fungal growth.

The outer bark from pedunculate oak (English oak) is put into the cranial cavity of the skull of a domestic animal. The calcified shell of the skull protects the brain, an organ that also shows highly contrasting features. On the one hand its metabolism is intensely vital (the brain begins to die if the circulation stops for only a few seconds), on the other hand brain cells have no power of regeneration, and some of them die off whenever we think. (To allay any fears–the human brain contains more cells than can be used up in a lifetime; no need to stop thinking, therefore.)
The skull of a bovine animal, sheep, goat, pig or horse is filled with crumbled oak bark and buried in a site where water from melting snow or fresh rain water periodically flows through a layer of sludge consisting of rotting plant matter. Protected by the calcified cranium, the bark goes through a rotting process. The principle is the same as before, namely, that natural properties are enhanced in making the preparation.
The Oak Bark preparation protects against the kind of excessive vitality that may lead to fungal infections.

Method

From mid-August to September take the outer bark from pedunculate oaks (Quercus robur) over 30 years of age (diameter of trunk 30 - 50 cm) and preferably still alive.

According to Rudolf Steiner *(AC)*: 'The surface, the outermost layer of bark, crumbles when we remove it', which clearly refers to the outer bark. However, indications given by some biodynamic practitioners refer to the resinous layers beneath the outermost layers of bark. The use of both outer and inner bark as far as but excluding the fibrous bast is therefore recommended.

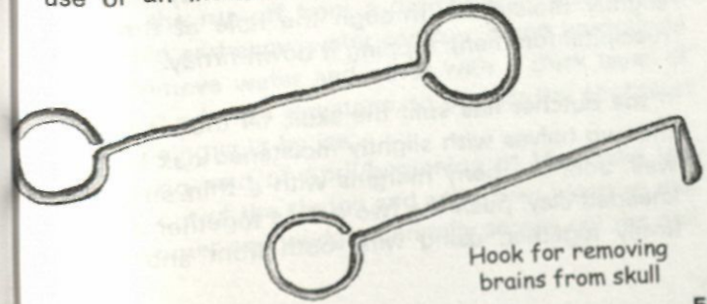
Acorn with stalk (penduncle) and leaf

Bark

Stripping knives, axes or coarse files have proved useful for removing the bark, letting it drop on to a cloth spread on the ground around the trunk. (Trials are in progress with a pair of chainsaw blades, that are almost worn out, moving in opposite directions, with 2 handles attached so that two people can work together to rub off the bark.) If fairly large amounts are needed it is a good idea to ask the forester which trees are due to be felled in the winter, so that the bark may be taken from them.

Reduce the bark to crumbs using a masher, hammer mill, kitchen chopper or large mortar and sieve. The largest particles should be about wheat grain to pea size.

At the same time obtain skulls from slaughtered animals, usually bovines, but also sheep, goats, pigs or horses. It is an advantage to use skulls from animals killed on the farm or from neighbouring biodynamic farms. The brain can be removed by passing compressed air or a jet of water in through an extended nozzle, or by using a hook or ring. The use of an industrial vacuum cleaner with a hose



Hook for removing brains from skull

extension is also very effective and has th advantage of ensuring the complete and clea removal of brain matter.

Care should be taken to preserve the membran lining the skulls. If skulls have been obtained at a unsuitable time, keep them safe from dogs and foxes, either by hanging them up on the side of th wood shed, for instance, to dry in the sun or b burying them in a compost heap.

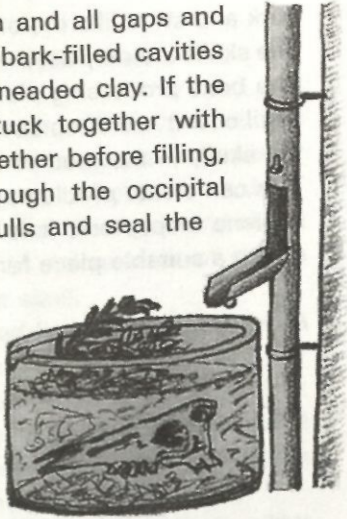
Dried skulls may also be used. Soak them briefly i water to prevent injuries from sharp, dry bits of skin.

In order to conform to current health regulations fo the disposal of meat residues, the skulls may be pu in a plastic container, with compost and sawdust al around, and moistened before putting on the lid. Worms and microbes do the cleaning job; sun and fungi take care of disinfection.

Between the end of August and end of Septembe fill the skull with the oak bark, which may be dry o slightly moistened, through the hole at the back (occipital foramen), tapping it down firmly.

If the butcher has split the skull, fill the sinuses in the two halves with slightly moistened oak bark as well. Join the bony margins with a thin strand of kneaded clay, push the two halves together and tie firmly together, using wire, both front and back.

Seal the occipital foramen and all gaps and holes leading to the oak bark-filled cavities with bone splinters and kneaded clay. If the two halves have been stuck together with strips of clay and tied together before filling, put the oak bark in through the occipital foramen as for whole skulls and seal the foramen.



Skull barrel next to drain pipe

Put the skulls in a wooden barrel or an upright section of concrete pipe that has been sealed with clay at the bottom. The container should have been filled with sufficient plant material and rainwater during the summer to produce a sludge. Place it under the run-off from a drainpipe in such a way that rain and snow water can run in and be drained off. Remove water and cover with a thick layer of straw if a freeze threatens, to protect the container from being split by ice.

In spring—end of April/beginning of May—take the skulls out of the sludge and split them using an axe or hammer and wedge. Carefully scrape out the oak

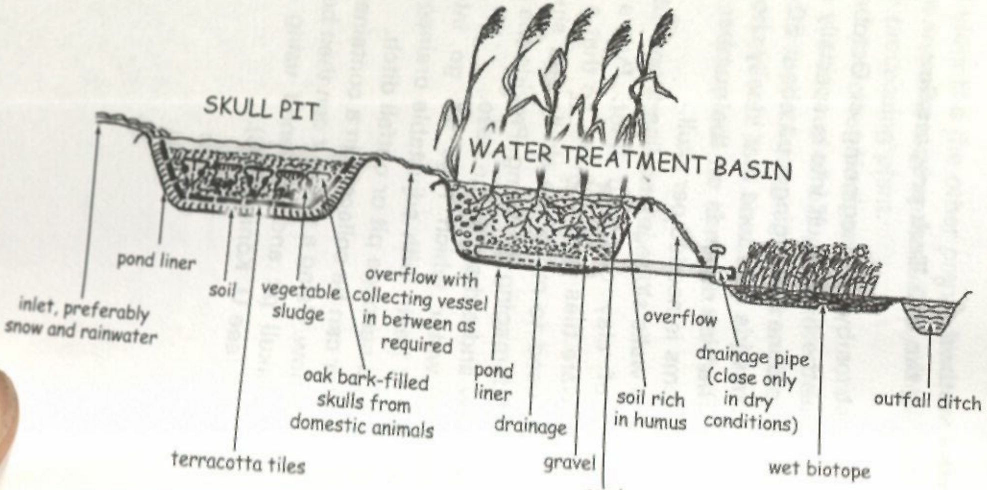
bark and store like the other preparations.
The skulls are only used once and may then be taken to a bone processing plant.
Until now it has often been common practice to bury the skulls in the mud of old ponds or stream beds. This can create problems with water authorities and hygiene inspectors. It is therefore a good idea to create a suitable place for them on the farm.

For processing and storage see page 77.

A new method of making the Oak Bark preparation

In August, or by the beginning of October at the latest, put the filled skull into a specially prepared pit. This is done by digging a pit about 50 cm deep and 60 cm wide in ground that ideally should slope a little. The size depends on the number of skulls. 50 x 30 cms is needed per skull.
Make the walls slope in and line them with approx. 15cms of clay or pond liner. Put a layer of earthenware tiles on the lining, so that a dung fork can be used to move the skulls and sludge about without damaging the lining. Provide the pit with an overflow and a drain at the base.
Let the water which runs off go into a water treatment basin with adjustable drainage and from there to a seepage pit or outfall ditch.
The water can be collected in a container fitted with an overflow. Using a pump it can then be taken back to the skull pit and enlivened using a Flowform cascade (see U. König 1998).

Skull pit for the oak bark preparation


SKULL PIT
WATER TREATMENT BASIN
inlet, preferably snow and rainwater
pond liner
soil
terracotta tiles
vegetable sludge
oak bark-filled skulls from domestic animals
overflow with collecting vessel in between as required
pond liner
drainage
gravel
sand
soil rich in humus
overflow
drainage pipe (close only in dry conditions)
wet biotope
outfall ditch

Your notes:

Dandelion preparation (506)

(Taraxacum officinale, Compositae family)

Dandelion

People love to see the sun-like golden dandelions flowering among the young grass in spring. Farmers are less pleased when the dandelion fills up gaps in the grass cover. The dandelion is very adaptable, producing long, broad leaves and tall flowering stems in the shade, and fine, narrow leaves and short flowering stems bearing brilliant yellow flowers in the sun and especially in the mountains. The plant is undemanding. The tap root is filled with latex. Above the leaf rosette rise a few hollow, latex-bearing stems, each with a firmly closed flower bud. This will only open when the dew has gone and the sun is giving light and warmth. The flowers close up again in the afternoon. The composite flowering head consists of complete single florets on a receptacle with an involucre of bracts at the base. The flowers open as the dew vanishes in the morning, facing towards the east. They close in the afternoon, facing towards the south west, a little further each day over several days.

When flowering is over, the flower stays closed. When it finally opens for the last time, a minor miracle has happened and we see a delicate, radiant sphere of fine 'parachutes' (the parachute is known as a pappus) around the domed receptacle–the dandelion clock. Each feather-light seed-bearing pappus is borne away on the wind; each one consisting of fine siliceous cellular tissues. The silica coming to expression in the dandelion clock makes this plant a special sense organ for the light. Silica supports sensory functions in human and animal skin and sense organs, above all the eyes. In the plant, and above all in the dandelion, this type of sensory function arises from interaction between silica and potassium.

The animal organ used to contain the dandelion flowers is the bovine mesentery or caul fat (great omentum). The natural position of stomach and intestines within the coelum is complex and normally inaccessible. The omentum is the first thing a skilled butcher removes, while the animal is still lying on the ground. It is the great fold of the peritoneum, starting at the rumen and enclosing the whole intestine like an apron on the abdominal side. It lies loose except where it is joined to the stomach.

When the carcass has been raised up, the butcher first of all removes the stomachs and then the whole intestine. As it lies spread out one sees the mesentery of the small intestine along the end of peritoneal fold. If the small intestine is cut away, the peritoneum forms coils corresponding to those of the intestine.

The ruminant colon is a spiral within this fan-like peritoneal fold. It has to be cut away from one side before the mesentery can be used for our purposes.

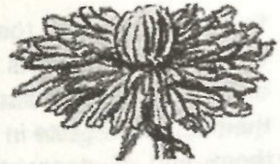
The omentum may also be used. The peritoneum is the vehicle for the nervous system throughout the metabolic region of the animals.

The dandelion flowers are wrapped in the lean middle part of the mesentery and left buried in the ground throughout the winter.

Both the mesentery and the omentum tend to be fatty, especially of course if excess carbohydrates and relatively little protein have been eaten, and the metabolic rate is low, e.g. in older heifers that have not become pregnant. The fat is suet, which solidifies on cooling, causing the organs to grow stiff. Such organs are not suitable for our purpose.

Method

Use dandelion flowers and the mesentery or omentum from a cow.



Dandelion flower

Collect the flowers as they open on a sunny morning in early spring. It is important that the inner florets are still in the form of a small cone, a 'crown'. Do not leave the flowers in the container for any length of time as they will quickly heat up and become useless. Flowers that have opened up completely at the centre continue to ripen on drying and begin to produce seed, which is why they should not be used.

The usual method is to let the flowers wilt quite a lot by leaving them in the sun for some hours and then to spread them in a single layer, i.e. very thinly, on a drying frame or on paper and place them in airy shade until quite dry. It is helpful to turn them over a few times in the early drying stage. The dried flowers should look yellow, and should include the fewest possible fully matured white heads.

The great omentum and mesentery should have little fat on them, as is normally the case with dairy cows not fed on maize.

Again it is an advantage to have organs from animals slaughtered on the farm and to process them on the farm, too. This is done by cutting out the appropriate parts immediately after slaughter, drying them in the sun for 3 or 4 days and storing them in a cool place in a plastic bag. Keep an eye on them and if necessary dry them further. After soaking in warm water or dandelion tea they are ready for use. Fresh omentum and mesentery is of course infinitely preferable.

In autumn–from about Michaelmas (29th September) to mid-October–moisten the dried flowers with a tea or juice expressed from whole dandelion plants minus the roots, using just enough to have them slightly damp, like fresh flowers that have wilted a great deal. Cut pieces of mesentery or omentum into squares, 20 to 35 cm in width. Put 2 to 5 handfuls of dandelion flowers on each square, pressing them together, and folding the corners of the material up around the flowers so that they are completely enclosed. Each ball, up to a child's head in size, is tied around with string, hung up for a day or two to dry a little, and then buried.

Another method is to wrap the much wilted flowers immediately in mesentery or omentum and store until autumn either in dry peat or hanging in a dry place (AC, notes). Care must be taken in this case to prevent the material going mouldy or sour, or being eaten by birds.

Put the balls in the pit closed side down, as for yarrow bladders, chamomile intestines and Horn Manure, so that water does not seep in and grow stagnant, which would result in silage. The pit may need to be specially protected from foxes, dogs and mice eager for the fat. Elder branches and a lath grid (old disposable pallets) are useful for this.

Dig up the balls in spring–end of April/early May–and remove the contents.

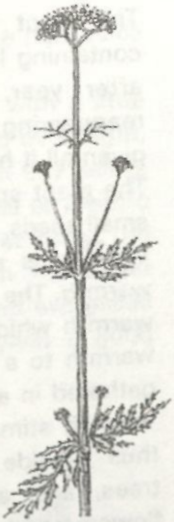
Chop up the residual omentum or mesentery. This is part of the preparation and may also be used in liquid or semi-liquid manure or in birch pits.

For processing and storage see page 77.

Your notes:

Valerian preparation (507)

(Valeriana officinalis, Valerianaceae family)



Valerian

Valerian root has well-known sedative properties. In June valerian plants grow singly or in colonies in river meadows, on the damp edges of woods, along ditches and in clearings, by streams or where the water from a spring keeps a slope damp. In early summer a sturdy flowering stem rises rapidly from the broad rosette of reddish green leaves, bearing a cluster of pink or white tubular flowers at a height of up to 2 metres. The nectaries secrete a sticky sweet liquid with the characteristic scent which attracts many different insects. Valerian is a perennial herb; its roots are fairly thick at the top and fine lower down. When winter has passed it produces dark red leaves which turn a dark green as they grow large and spreading. The stem leaves are opposite, lanceolate and divided, partly toothed, and up to two palms in size.

The plant prefers half-shade and a damp soil containing lime. It will grow in the same sites year after year, but then it suddenly disappears, reappearing in another place. It seems as if it has given all it has to give and is then able to move on. The plant spreads via rhizomes (root runners) and small seeds, each with a pappus.

Valerian is a plant connected to the element of warmth. The root extract gives soothing, comforting warmth which is used medicinally. The plant adds warmth to a landscape, and when the flowers are gathered in a basket they develop intense warmth. Valerian stimulates phosphorus processes. It may thus provide frost protection for flowering fruit trees, and also promotes the development of flowers and fruit.

The preparation is made by means of lactic fermentation of the juice expressed from the flowers. Sprayed on to compost heaps it provides protective enveloping warmth, and is also beneficial to earthworms.

Method

Collect newly opened clusters of flowers in the morning, always leaving a few in place for the insects. Large quantities must not be left in their container for too long as they tend to heat up. Chop or grind finely and express to obtain the pure juice from the flowers.

Another method is to wet the flowers with a little rain or well water, leaving them to stand over night, and chopping or grinding them the next day before expressing the juice. A mincing machine or electric mixer with juicer attachment is a great help. The residue may be soaked for a day in the water previously used to soak the flowers and expressed again, using a fruit press; this will yield a good second-class quality.

Juice extractor

Glass bottle with rubber cap

Strain the green or coffee-coloured juice and decant into bottles or glass flasks, close these with a rubber cap or fermenting tube and store in the dark, in cellar-coolness. Exclusion of air helps fermentation. The gases need to escape, and air should not get in. It is advisable to wait for about 6 weeks before sealing the bottles completely. It is not a good idea to close them with a cork immediately, as the gases produced in the fermentation process may cause the bottle to explode.

The liquid should be reddish brown in colour (like coffee), with a strongly aromatic, fruity, slightly sour smell; it should not stink or smell of manure liquid.

Check the preparation at intervals, removing any bottles with spoiled contents. Do not simply destroy any liquid that has spoiled but pour it into your birch pit, over the compost heap, into the dung channel or semi-liquid manure collecting pit.

Experience has shown (no statistics available) that spoiling can be prevented by avoiding leaf days and by giving preference to flower days (according to Thun's planting calendar) for picking and processing the flowers.

If a layer of mould forms at the top of the container and sediment at the bottom, it is advisable to remove the top layer carefully and strain the contents into a new container, using a fine sieve (a new petrol strainer is best) and leaving the sediment in the bottle. The development of further mould can be prevented by putting a few drops of volatile oil on the surface of the liquid in larger containers.

The Valerian preparation matures with storage. It may be kept for several years and used for as long as it retains its scent.

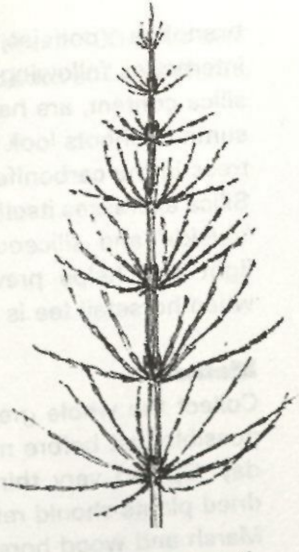
The residue left when valerian flowers are expressed may be dried and stored, and sprinkled on your birch pit or suspended in water and added to it.

For storage, see page 77.

Your notes:

Horsetail preparation (508)

(Equisetum arvense,
Equisetaceae family)



Common horsetail

Horsetail holds a special position among the plants used in the preparations. It is not one of the compost preparations (502 - 507) but is used to treat plants directly. Like ferns and mosses it is a spore-bearing rather than a flowering plant. A network of rhizomes develops well below ploughing depth. In spring, a pale, unbranched shoot appears, with node following node, topped with a kind of club or spike, its spores covered by small hexagonal 'shields'. The spores are wind-borne and germinate to produce moss-like prothalli with either male or female organs. The male organs produce swarm spores to fertilize the female prothallus which then develops into the plant.

The barren green summer shoot grows from the deep-lying rhizome. Like the shoot, the lateral